

# Improving the Wallumbilla Hub

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# Executive Summary

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The Australian Petroleum Production & Exploration Association (APPEA) engaged The Brattle Group to help APPEA develop ideas for improving the functioning of the Wallumbilla Hub. We led a series of workshops with APPEA members, and also met with individual members in a process to generate and test ideas. Once the Department of Industry, Science, Energy and Resources (DISER) consultation paper was published in November, we also discussed the ideas in that paper relating to the hub with APPEA members. Our report results from that process and benefits from suggestions and feedback provided by APPEA members. Nonetheless, this is a Brattle report, and the opinions it contains are those of the authors alone.

A trading hub based at Wallumbilla was introduced in 2014, and since then the East Coast Gas Market has successfully navigated very substantial changes: overall gas production has approximately tripled over a short period of time as LNG exports from Gladstone started up, and the market now extends to the Northern Territory. There have also been significant changes to the rules for obtaining access to pipeline infrastructure over this period. However, relative to gas markets in North America and much of Europe, the East Coast Gas Market is not transparent. There is no reliable published reference price for domestic supplies and, as a result, market participants must invest effort in price discovery. Consequently, the gas supply contracting process is more costly than in other markets. Participants in the East Coast Gas Market tend to buy and sell gas on long-term contracts that are individually negotiated and contain bespoke terms. Particularly for smaller entities, the lack of transparency may make it difficult to plan their operations and they may be uncertain whether the price at which they transact is a competitive one. If there were a reliable reference price, this would bring significant benefits in terms of transparency and reduced transactions costs, and would provide the option for market participants to buy and sell gas at a reliable index price. In turn, this would support efficient investment signals (both for gas producers and gas consumers), increase liquidity, and facilitate more competitive market outcomes.

Market participants currently trade gas at Wallumbilla, as well as in the downstream balancing markets centred on Brisbane, Adelaide, Sydney and Melbourne (the STTMs and the DWGM). There is a published spot price associated with each of these trading venues, but none of them, including Wallumbilla, has sufficient liquidity (number of transactions, volume of gas traded and number of participants) for the spot price to be a reliable reference price, or for the venue to be a feasible alternative to traditional long-term

contracts negotiated on a bilateral basis. Consistent with the lack of liquidity at Wallumbilla, the price spread between bids and offers is wide. Furthermore, the trend in liquidity at Wallumbilla over time is not promising, and suggests that the Government's vision of liquid trading and a transparent reference price based at the Wallumbilla Hub will not be achieved on a business as usual basis. Although the East Coast Gas Market is smaller than most overseas gas markets and has fewer participants, the Wallumbilla Hub is favourably located close to key pipeline, storage, production and export infrastructure. We do not think that market size and number of participants would preclude liquid trading at Wallumbilla if the conditions were otherwise favourable. We have therefore considered how the design of the Wallumbilla Hub might be modified to promote increased liquidity.

The Wallumbilla Hub currently has a rather narrow geographic scope, and the standard product ("WAL") traded on the hub is tightly defined. In order to transact this product, market participants must be shippers with rights to move gas to and from a specific sub-set of locations on some of the pipelines in the vicinity of Wallumbilla. Some of these pipelines operate at low pressure and some at high pressure, and transactions where gas is sold at the low pressure side and bought on the high pressure side require market participants to obtain compression service. In effect the WAL product is split between low and high pressure. There is also a second product ("SEQ") which allows trading of gas inside another of the pipelines at Wallumbilla (the Roma to Brisbane pipeline) before that gas is delivered. A buyer wanting gas at Wallumbilla could buy the WAL product but could not buy the SEQ product unless that buyer also had transportation rights to move the gas from the Roma to Brisbane pipeline to Wallumbilla. The current arrangements may have benefits in terms of signalling differences between the value of gas at different locations, but they also mean that liquidity is split across the different locations, implying a reduction in the number of market participants able to trade and increased transactions costs. In order to have the best chance of increasing liquidity, the design of the hub would need to evolve to broaden its geographic scope and loosen the definition of the traded product. We therefore recommend that options for doing this should be scoped out in detail so that the important implementation questions can be analysed and resolved, and the costs of reforms assessed against anticipated benefits.

Broadening the geographic scope of the Wallumbilla Hub is consistent with the changes made in 2017 when three trading locations at Wallumbilla were merged. It is also consistent with options explored in the Australian Energy Market Commission's *East Coast Wholesale Gas Markets and Pipeline Frameworks Review* (published in May 2016), and the similar suggestions about the Wallumbilla Hub in the November 2021 DISER consultation paper. We think that a guiding principle for future development of the Wallumbilla Hub should be to choose design options that promote liquidity and reduce transactions costs, even if this involves more cost sharing than the current design. Some options may be more complicated

or expensive to implement than others, and the best way of broadening the scope of the hub is not clear at this point. For example, we do not know if the geographic scope of the Wallumbilla Hub should expand all the way to include the downstream Brisbane STTM. Important questions will need to be analysed in detail—such as the need for investment to relieve constraints, the role of the hub operator, governance, and the treatment of existing long-term transportation contracts—in order to find a way forward that has acceptable costs and is not so complicated that it defeats the purpose of the reforms.

In mature gas markets, liquidity is provided on a commercial basis by market participants that are able to profit from doing so even at relatively narrow bid-offer spreads, and there is no need for an official “market-making” function. Broadening the scope of the Wallumbilla hub should create a more favourable environment for liquidity to develop. However, it is possible that even after design changes are implemented, some additional impetus may be needed to “kick start” the virtuous cycle of increased liquidity, which reduces bid-offer spreads, which in turn promotes increased liquidity. Once the virtuous cycle is established, liquidity will be provided by market participants trading in the normal way, but before liquidity is established the lack of liquidity itself could still be a barrier to increased trading. Another barrier could be the need for more market participants to become familiar with alternatives to the traditional ways of buying gas. A market-making function could be considered as a possible method for kick starting liquidity after the Wallumbilla Hub is redesigned, if, after the new design has had some time to take effect, market participants do not see a commercial opportunity in providing liquidity. It would not make sense to introduce a market-making function within the current design of the Wallumbilla Hub since redesigning the hub may be sufficient in itself to create the conditions for the desired increase in liquidity.

Determining the details of a redesigned Wallumbilla Hub and implementing the changes will take some time. However, we have also identified some other changes which could be implemented more quickly and in parallel. These changes will improve the current design and will also be compatible with the expanded hub, although we would not expect these changes to be sufficient by themselves to induce a step change in liquidity. We support adjusting the operation of the Wallumbilla Hub to make trading fully anonymous, because the current lack of anonymity could be a barrier to trading. We also support adjusting the rules about credit support and the risk of a hub participant defaulting (so-called “prudentials”) to streamline requirements across the different energy markets and reduce the cost of participating. However, this should not expose market participants to undue risk from a default. We also think that making longer-dated products available for trading at the hub may be beneficial and would not be costly.

# I. Introduction

1. The Australian Petroleum Production & Exploration Association (APPEA) engaged Brattle to support a process for APPEA to develop ideas for improving the functioning of the Wallumbilla Hub. We led a series of workshops and also met individually with APPEA members in a process to generate and test ideas.
2. This report is a result of that process, and therefore benefits from ideas generated in discussion with APPEA members, and also benefits from feedback from APPEA members. However, the recommendations in the report and the opinions expressed are those of the report's authors.
3. While we were working with APPEA to develop this report, the Department of Industry, Science, Energy and Resources (DISER) was also developing ideas for improving the Wallumbilla Hub, and recently published a consultation paper<sup>1</sup> on this topic, as well as on some other areas of possible improvements to the East Coast Gas Market, including to pipeline capacity trading. Since our work covers some of the same topics raised in the DISER consultation paper, we have included references to and comments on the DISER paper in this report. However, the DISER paper is broader in scope than our work and we do not comment on pipeline capacity trading nor on the “other enabling framework reform options” in the DISER paper.<sup>2</sup>
4. The Government has set out a vision for the East Coast Gas Market<sup>3</sup> which includes liquid trading—that is, many buyers and sellers, frequent transactions, and in aggregate large volumes bought and sold<sup>4</sup>—and a transparent reference price based on the Wallumbilla Hub. The Government said that it would “[e]stablish an Australian Gas Hub at our most

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<sup>1</sup> *Options to advance the east coast gas market—Consultation on the Wallumbilla Gas Supply Hub and pipeline capacity trading framework*, November 2021.

<sup>2</sup> We comment on chapter 3 of the DISER paper but not on chapters 4 and 5.

<sup>3</sup> For example, “The Council’s [COAG’s] vision is for the establishment of a liquid wholesale gas market that provides market signals for investment and supply, where responses to those signals are facilitated by a supportive investment and regulatory environment, where trade is focused at a point that best serves the needs of participants, where an efficient reference price is established, and producers, consumers and trading markets are connected to infrastructure that enables participants the opportunity to readily trade between locations and arbitrage trading opportunities. (COAG Energy Council, *Australian Gas Market Vision* (December 2014)).

<sup>4</sup> Where there is liquid trading the spread between the bid price and the offer price is narrow, and thus the transactions costs associated with trading are low. Liquid trading in spot products (such as day ahead or month ahead gas) also supports forward trading which allows market participants to hedge price risk over extended periods.

strategically located and connected gas trading hub at Wallumbilla in Queensland to deliver an open, transparent and liquid gas trading system”.<sup>5</sup> In this report we review progress on achieving this element of the Government’s vision for the gas market, test whether achieving it is feasible, and recommend some improvements to increase the likelihood of success.

5. The Wallumbilla Hub has a number of inter-related components, including:
  - a. the electronic platform for trading, operated by AEMO (similar in some respects to other trading platforms such as the ASX or NYMEX), which is called the “Gas Supply Hub”;
  - b. the defined “products” traded on AEMO’s platform, such as gas to be delivered day ahead at a specific location in the pipeline network near Wallumbilla;
  - c. the rules for participating in trading on the platform, which cover matters such as credit support (termed “prudential requirements” or “prudentials”) and settlement of amounts owing;
  - d. the network of pipelines and associated infrastructure used to move gas at Wallumbilla; and
  - e. the set of contracts among AEMO, shippers and infrastructure owners which enable the hub to function.
6. AEMO’s Gas Supply Hub has some functions unrelated to Wallumbilla—for example, there are products traded on the Gas Supply Hub that are delivered at Moomba, Wilton or Culcairn (locations on the pipeline network far from Wallumbilla). Furthermore, market participants can use the clearing function of the Gas Supply Hub to make bilateral trades of non-standard products which may or may not be located at Wallumbilla (referred to as “off-market” trades). In addition, there are financial products listed on the ASX which are derivatives of the Wallumbilla price at the Gas Supply Hub. In this report we use the term “Wallumbilla Hub” to refer to all of the inter-related activities that may be involved in trading at Wallumbilla.
7. Several reform initiatives relating to various aspects of the East Coast Gas Market are under development or have recently been implemented. At the same time as announcing its focus on liquid trading and a transparent reference price based on the Wallumbilla Hub, the Government also announced other initiatives, including a voluntary industry-led code of

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<sup>5</sup> *Gas-fired recovery*, media release from the Hon Angus Taylor MP, Minister for Industry, Energy and Emissions Reduction (joint with Prime Minister Scott Morrison and Minister for Resources, Water and Northern Australia Keith Pitt), 15 September 2020.

conduct to “[l]evel the playing field for gas producers and consumers”.<sup>6</sup> New measures to improve transparency of gas prices, including a requirement that prices in short-term gas sales and swaps be reported to AEMO so that aggregated information can be published on the Gas Bulletin Board.<sup>7</sup> Changes to the design of the Wallumbilla Hub will need to be consistent with and compatible with these and other broader changes to the East Coast Gas Market. While ongoing reforms to the market are designed to support the Government’s vision, we would not expect these changes to have a direct impact on liquidity at Wallumbilla, or the ability of Wallumbilla trading to generate an effective reference price.

8. In section II of this report we describe the role of the Wallumbilla Hub within the broader East Coast Gas Market, and we examine whether the Wallumbilla Hub is capable of supporting the Government’s vision by delivering liquid trading and a transparent reference price. In section III we recommend how the design of the Wallumbilla Hub should evolve in order to increase the likelihood that liquid trading and a transparent reference price will develop over time. Finally, in section IV we discuss some other changes that should improve the functioning of the Wallumbilla Hub but which, by themselves and without more fundamental design changes, are not likely to facilitate significant progress.

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<sup>6</sup> *Ibid.*, and see also the APPEA announcement of 26 March 2021 *Gas Industry—Voluntary Code of Conduct*, and *Gas industry finalises voluntary code of conduct*, media release from The Hon Angus Taylor MP, Minister for Industry, Energy and Emissions Reduction, dated 1 December 2021.

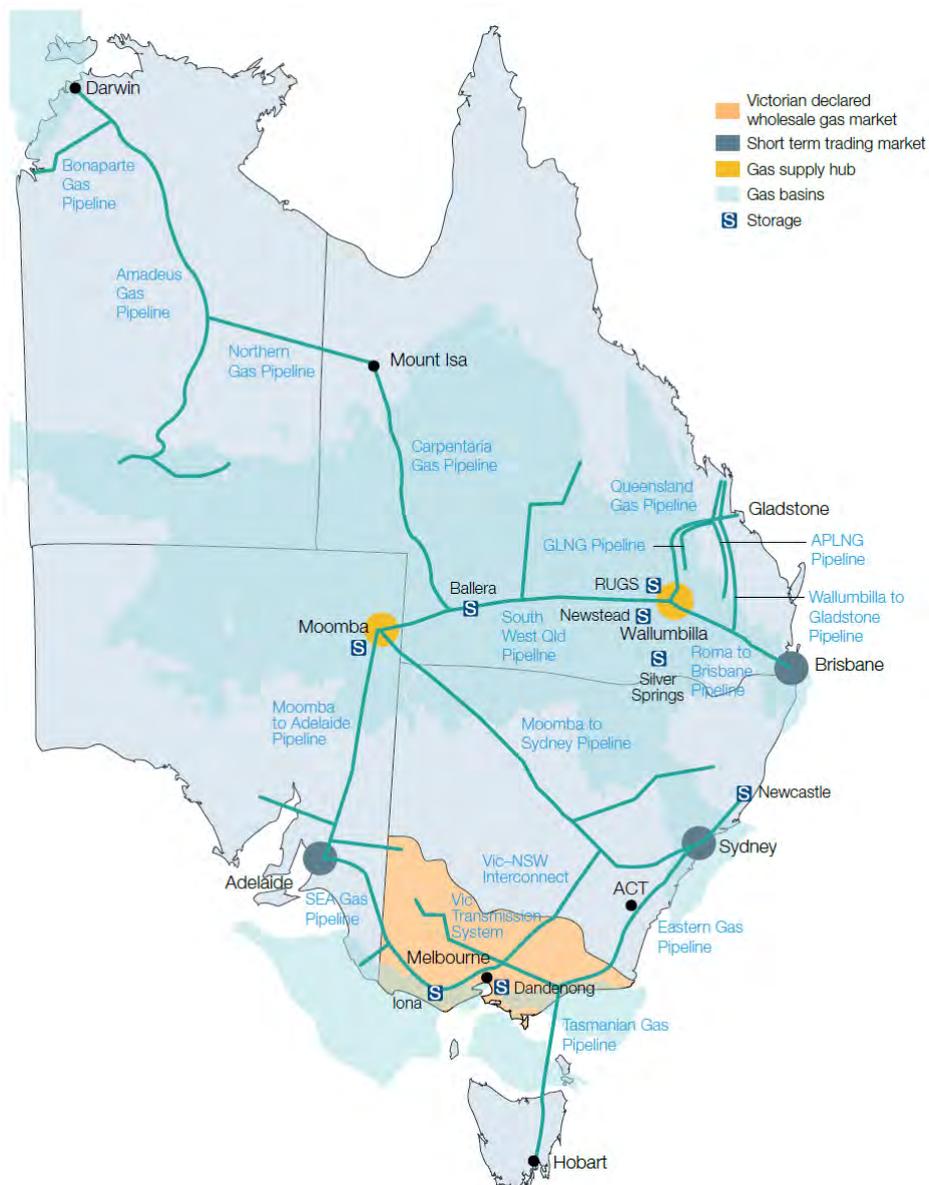
<sup>7</sup> See *Regulatory amendments to increase transparency in the gas market*, Department of Industry, Science, Energy and Resources, 19 November 2020 (and updates at <https://www.energy.gov.au/government-priorities/energy-ministers/energy-ministers-publications/regulatory-amendments-increase-transparency-gas-market>). The Gas Bulletin Board is operated by AEMO and collates and publishes information that pipelines and market participants are required to submit.

## II. Role of the Wallumbilla Hub

### A. Overview of the East Coast Gas Market

9. Figure 1 is a map of the East Coast Gas Market. Important features include the locations of the main areas where gas is consumed—the downstream markets centred on Melbourne, Sydney, Brisbane and Adelaide; the basins from which gas is produced, with the most important ones being those in the southern part of Queensland, extending into South Australia around Moomba, and off the coast of Victoria; and the LNG export terminals at Gladstone. Figure 1 also shows the main pipelines connecting gas production with locations where gas is consumed and exported.

FIGURE 1: MAP OF THE EAST COAST GAS MARKET



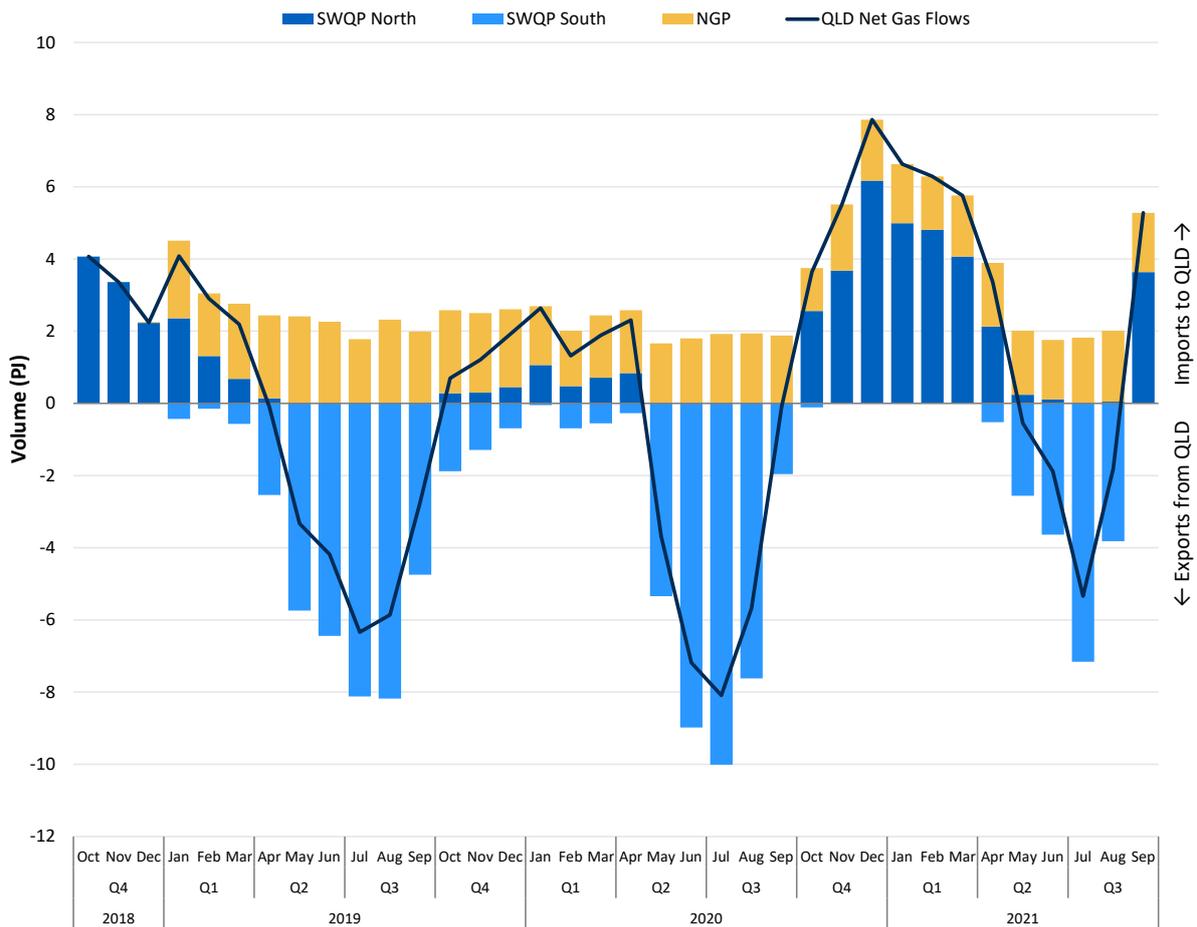
Source: AER Wholesale Markets Quarterly Report, Q3 2021.

10. The Wallumbilla Hub is located about one-third of the way between Brisbane and Moomba,<sup>8</sup> and is at the intersection of some major pipelines. It is also close to storage facilities, and to the Gladstone LNG export plants. It is connected to the SWQP (South West Queensland Pipeline), through which gas can flow west to Moomba and on south to Sydney, Adelaide and Melbourne, or flow east and north to Gladstone from the south, depending on prevailing conditions.
11. Approximately two thirds of the total gas produced in the East Coast Gas Market is exported from Gladstone as LNG, with one third being consumed in the downstream markets of the eastern states. Production is not evenly distributed: about 75% of total East Coast Gas Market production is located in Queensland; 15% is in Victoria; and 5% in each of South Australia (in and around Moomba) and the Northern Territory. There is no significant gas production in New South Wales. Excluding LNG production, gas demand is highest in Victoria, which accounts for about a third of the total domestic demand, followed by Queensland and then New South Wales. Since the distribution of gas demand does not match that of production (and also because gas demand from households is highly seasonal), there are large flows on the pipeline network shown in Figure 1, and those flows vary over time. Figure 2 provides an example, showing flows into and out of Queensland. There is a fairly constant flow from the Northern Territory into Queensland, but gas tends to flow out of Queensland towards the southern states during the winter, with that flow reversing during the summer as gas from South Australia and/or Victoria moves into Queensland.

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<sup>8</sup> Moomba was historically an important gas producing region, supplying Sydney and Adelaide. The pipelines between Moomba and Ballera, Wallumbilla and Brisbane were built later and now permit transit of gas between Queensland and the southern states.

FIGURE 2: IMPORT AND EXPORT FLOWS IN QUEENSLAND



Source: based on data from AER Wholesale Markets Quarterly Report, Q3 2021.

12. Given these flows and its proximity to the key infrastructure (pipelines, storage, production and export), Wallumbilla is a favourable location for a gas trading hub. However, the organised market for trading gas at Wallumbilla (AEMO’s Gas Supply Hub) has existed only since 2014: the East Coast Gas Market functioned without the Wallumbilla Hub for many years.
13. The predominant form of trading in the East Coast Gas Market is long-term bilateral contracts (Gas Sales Agreements or GSAs). Producers, large gas customers and retailers tend to agree multi-year contracts which often contain bespoke terms that are individually negotiated. The GSAs are tailored to the specific needs of the customer (and producer or retailer), for example in terms of the flexibility to take more gas at some times than others, and the ability to suspend deliveries for a certain number of days each year when infrastructure is out for maintenance. Prices in these contracts are individually negotiated,

and the market is not transparent: it is difficult to identify a “prevailing market price”.<sup>9</sup> Many of these contracts contain substantial “take or pay” commitments,<sup>10</sup> and can thus underpin long-term investment in production upstream.

14. In addition to the bespoke long-term contracts through which much of the gas consumed in the East Coast Gas Market is transacted, shorter-term trading (of less than one year) also occurs on a bilateral basis. Many market participants have negotiated Master Sales Agreements (MSAs, also on a bilateral basis), which provide a framework for subsequent short-term sales. Having an MSA in place allows subsequent transactions to be concluded relatively quickly and cheaply since at least some of the key terms (for example, relating to credit) will already have been put in place via the MSA.
15. Trading at the Wallumbilla Hub accounts for a relatively small fraction of all the gas bought and sold in the East Coast Gas Market, as we show below. In rough terms, we estimate that at least 75% of production sold is under long-term GSAs of a year or more, with most of the rest being shorter-term bilateral deals under an MSA framework. Less than 10% is sold as standardised products in the organised markets that we describe below.<sup>11</sup>
16. Most of the gas flows along the pipelines shown in Figure 1 moves under long-term transportation agreements: gas shippers make long-term commitments to pay for pipeline capacity on a take-or-pay basis,<sup>12</sup> with such contracts able to underpin investment in new pipeline capacity when it is required. However, pipeline capacity may also be available on a short-term basis via a number of different arrangements, including a day-ahead auction of contracted but un-nominated capacity (ie, capacity which a shipper has reserved under a long-term contract, but which will be made available if that shipper is not using it on a particular day). Significant amounts of gas move across the network shown in Figure 1 as a result of the day-ahead auctions.<sup>13</sup>

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<sup>9</sup> See, for example, the discussion in the ACCC’s *Inquiry into the east coast gas market* (April 2016) and the subsequent publications of the ACCC’s *Gas Inquiry 2017–2025*.

<sup>10</sup> ie, the buyer commits up front to pay for a certain quantity of gas, whether or not it ultimately consumes the gas, and the seller commits to a firm supply.

<sup>11</sup> These figures are approximate and based on discussions with APPEA members.

<sup>12</sup> Gas transportation agreements typically involve shippers paying for transport capacity whether or not the capacity is used to move gas.

<sup>13</sup> For example, during 2020 about 4,000 TJ of pipeline capacity each month was purchased in the day-ahead auctions (summing capacity across all of the major pipelines). This data is available on the AER’s “Wholesale statistics” web-page at <https://www.aer.gov.au/wholesale-markets/wholesale-statistics>.

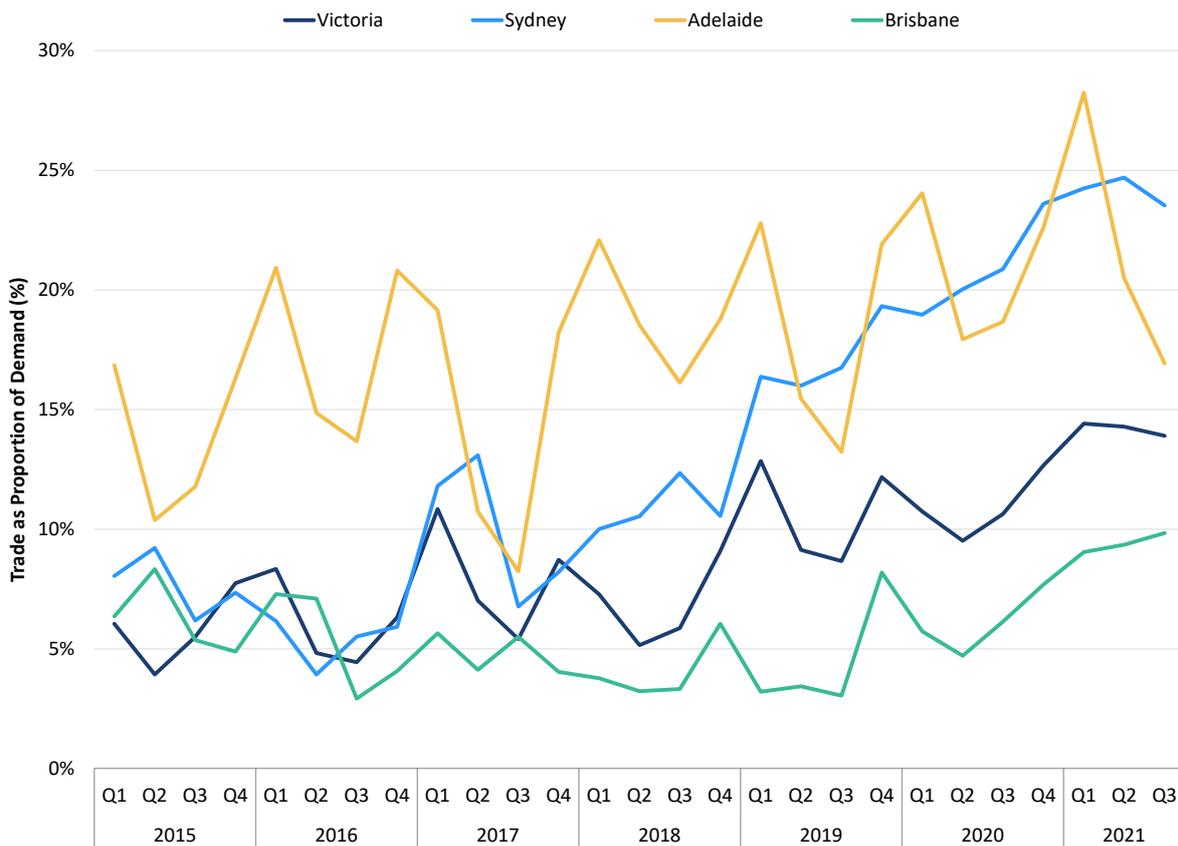
## B. STTMs and DWGM

17. Each of the major downstream markets is covered by an organised, compulsory set of trading arrangements which function in large part to maintain the physical balance between gas deliveries and offtakes, but which also facilitate short-term (daily) trading between market participants. These trading arrangements are called STTMs (Short-Term Trading Markets) in each of Sydney, Adelaide and Brisbane, and the DWGM (Declared Wholesale Gas Market) in Victoria. Like the Gas Supply Hub, these trading arrangements are operated by AEMO.
18. The STTMs and DWGM are primarily balancing mechanisms, and they operate as auctions.<sup>14</sup> In effect, all gas deliveries to each downstream market must be “sold” into the relevant STTM/DWGM, and all offtakes “purchased” at the STTM/DWGM. This provides a mechanism for the market operator to buy or sell any gas needed to ensure that location is balanced each day on an aggregate basis, and provides a price signal to encourage market participants to balance their deliveries and offtakes. Most market participants, most of the time, are approximately in balance, and are thus they are largely indifferent to the clearing price (because while they pay the clearing price on all of the gas they take from the system, they also receive the clearing price on all of the gas they deliver). However, increasingly over time the STTMs and DWGM have been used for day-ahead trading: a market participant with spare gas can simply deliver it to one of the STTMs or the DWGM and receive the clearing price (and, similarly, a market participant that is short can in effect buy gas).
19. The ability to transact gas at the STTMs and DWGM in this way depends on the availability of at least some price-sensitive volumes: additional gas volumes available at a higher price, and additional demand at a lower price. If there is little liquidity, a relatively small quantity of gas purchased would lead to a large increase in the clearing price. The total volume traded has grown over time. Figure 3 shows a measure of volumes traded in each of the four downstream markets.

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<sup>14</sup> The STTMs run daily and the DWGM runs several times per day. Market participants submit a schedule of bid or offer quantities and prices, and AEMO finds the price at which the volume of accepted offers will be equal to the volume of accepted bids, and all market participants pay or receive the clearing price.

**FIGURE 3: TRADE IN DOWNSTREAM SPOT MARKETS**

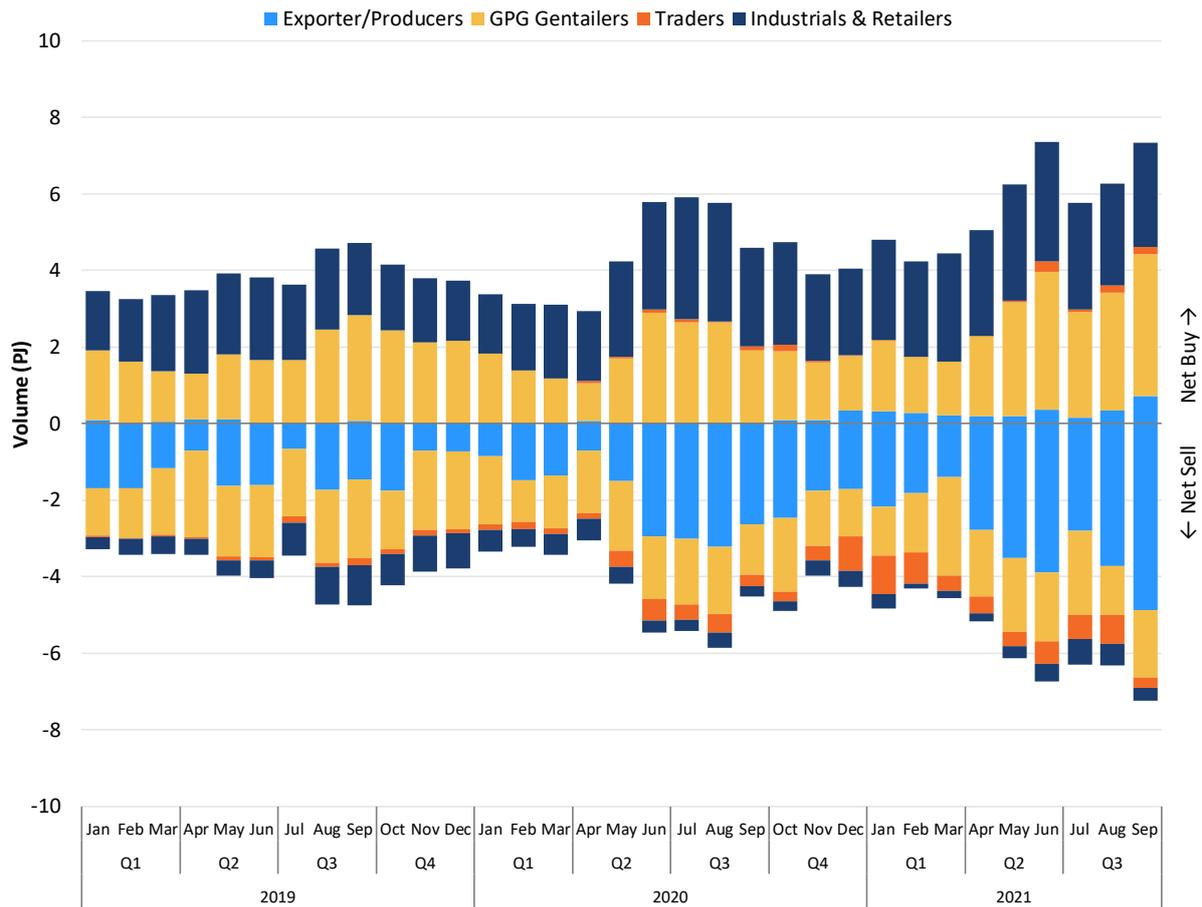


Source: based on data from *AER Wholesale Markets Quarterly Report, Q3 2021*.

20. The volumes shown in Figure 3 are the net position of each market participant, summed over all market participants each day, and thus show the net amounts of gas traded among market participants through these mechanisms. At each downstream market, the data is normalised by dividing by the total gas consumed in that location. Thus, for example, the proportion of total gas demand met through STTM trading at Sydney has grown from about 15% in 2015 to about 25% now.
  
21. Figure 4 is based on the same data as Figure 3, but aggregates trading across the downstream markets by market participant type (and shows absolute volumes). As might be expected, producers as a group are almost always net sellers, industrial customers and retailers are usually net buyers, and power generators / gentailers sometimes buy and sometimes sell. The total volume traded across the downstream markets has been averaging about 5,000 TJ per month over the last few years. This quantity is similar to the total amount of transportation capacity purchased in the day-ahead auctions each day, and is about 15% of total downstream demand across these four markets.<sup>15</sup>

<sup>15</sup> We estimate total downstream demand across the STTMs and DWGM is about 400 PJ per year, whereas overall demand is about 580 PJ per year (*AER State of the Energy Market 2021*, Chapter 4). We assume that the difference is large customers supplied directly from pipelines rather than from distribution networks.

**FIGURE 4: BUY AND SELL VOLUMES IN DOWNSTREAM SPOT MARKETS**



Source: based on data from *AER Wholesale Markets Quarterly Report, Q3 2021*.

22. We are not aware of market participants using STTM prices as a reference price (ie, contracting to buy and sell gas at these prices outside of the STTM mechanism itself).<sup>16</sup> While trading has grown over time at the STTMs and DWGM, these markets have not developed sufficient liquidity to provide an effective and reliable reference price, and in any case none of them has the favourable central location of the Wallumbilla hub.

### C. Trading at the Wallumbilla Hub

23. The arrangements for trading at the Wallumbilla Hub (on AEMO’s Gas Supply Hub exchange) are very different from the arrangements at the STTMs or DWGM. The former is an exchange where market participants can post offers to sell gas or post bids to buy, and can accept bids or offers posted on the screen. Each transaction is individually priced. Transactions can occur at any time (when the exchange is open). Participation is voluntary, and the Wallumbilla Hub is not used as a mechanism to ensure physical balance of the

<sup>16</sup> As discussed below, the DWGM price is used to underpin derivatives traded on the ASX. The volume of trading in these derivatives is low.

pipeline infrastructure. Standard products are listed on the exchange: balance of day; day ahead; daily (out to 7 days); weekly (out four weeks) and monthly (out three months). In addition, gas can be delivered at different locations at Wallumbilla, some of which are at high pressure and some at low pressure. These different locations are encompassed within the “WAL” product. Other products are also listed on the Gas Supply Hub, some of which are for gas to be delivered at locations far from Wallumbilla (at Moomba, Wilton or Culcairn). The “SEQ” product is for gas to be exchanged at a virtual point within the Roma to Brisbane pipeline (RBP). Although the RBP is one of the pipelines connecting to the Wallumbilla Hub, the SEQ and WAL products are not fungible (ie, a seller of the SEQ product cannot trade with a buyer of the WAL product, because the SEQ product does not encompass any Wallumbilla delivery locations).

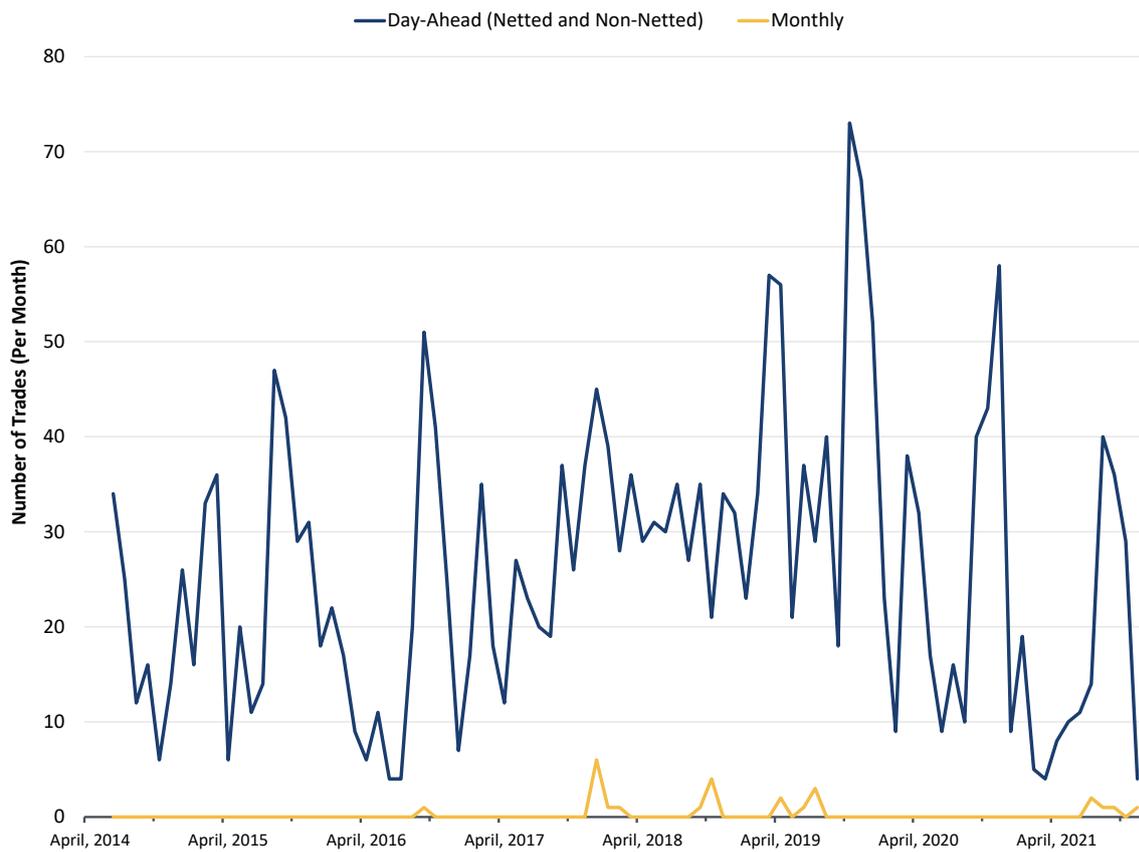
24. In addition to the various standard products which can be traded on the screen, “off-market” trading is also possible via AEMO’s Gas Supply Hub. Our understanding of this concept is that it allows market participants to transact bilaterally and then “register” the trade with the Gas Supply Hub, thereby using the mechanisms of the Gas Supply Hub to deal with credit risk and settlement. Because these are bilateral transactions, the terms can be different from those of the standard products listed on the screen (for example, the delivery location could be different). Thus we would not consider the off-market trades to be relevant for the development of trading liquidity or a reliable reference price, even if they are an important mechanism for market participants to transact.<sup>17</sup> We think that the ability to trade off-market is positive and the fact that market participants use this mechanism means that it is valued and is helping market participants to transact. However, since market participants increasingly choose to transact off-market, these transactions are not contributing to a transparent reference price.
25. In Figure 5 we show one measure of trading activity at the Wallumbilla Hub—the number of trades. We show data for day ahead (the most active product) and monthly deliveries (on-market only, though this data includes both WAL and SEQ products which are not fungible).<sup>18</sup> Figure 5 indicates that the daily product trades on most days but that the monthly product usually does not trade.

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<sup>17</sup> AEMO calculates and publishes a daily Wallumbilla price. This is based on the day-ahead WAL product (ie, does not take into account any SEQ trades or off-market trades). See AEMO’s *Gas Supply Hub Industry Guide*, section 12.

<sup>18</sup> As noted above, the SEQ product is close to but not at Wallumbilla and is not fungible with the WAL product (ie, a purchaser wishing to buy the WAL product cannot trade with a seller wishing to sell the SEQ product). When the Gas Supply Hub was launched in 2014 there were more non-fungible products.

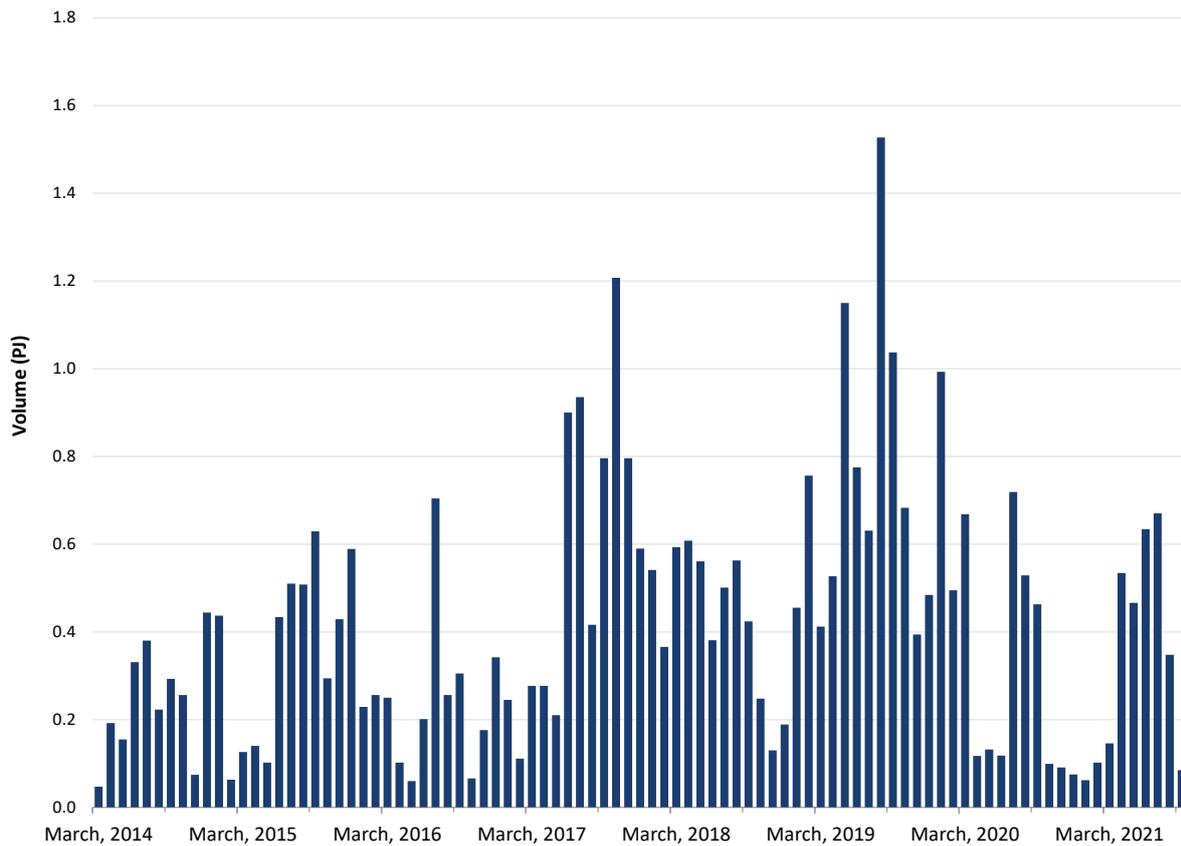
**FIGURE 5: TRADE COUNTS AT WALLUMBILLA GSH (DAY AHEAD AND MONTHLY DELIVERIES, WAL AND SEQ)**



Source: based on data from AER Wholesale Statistics, 'GSH trade count by product – Wallumbilla'.

26. Figure 6 shows a different measure of activity, based on the total volume of gas traded across all products (on-market). The amount of gas traded—around 0.5 PJ per month on average—is of a similar order of magnitude as the quantity of gas traded in the downstream markets (around 4 PJ per quarter, across 4 markets). It is a small fraction of the total gas produced in Queensland (about 100 PJ per month).

FIGURE 6: WALLUMBILLA GSH EXCHANGE-TRADED VOLUMES (WAL AND SEQ)

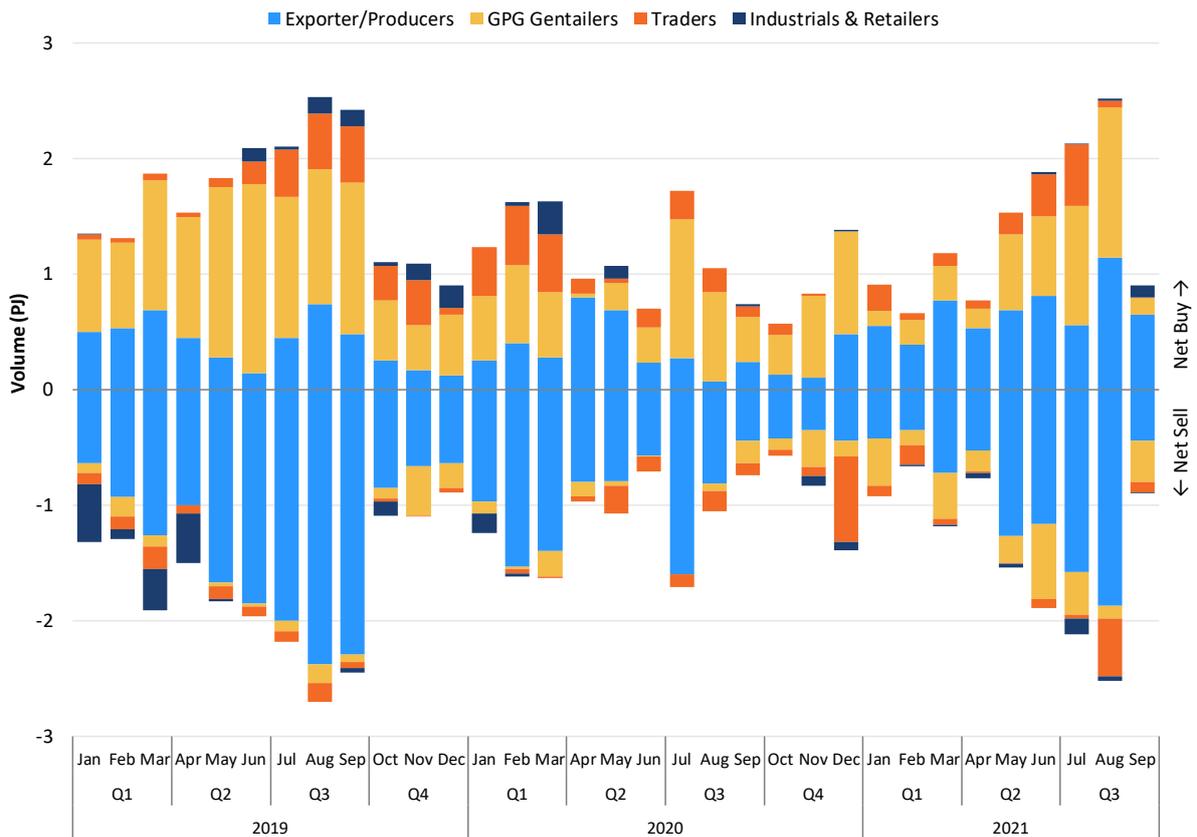


Source: based on data from AER Wholesale Statistics, 'Wallumbilla GSH - on and off market trades'. Note that only exchange-traded volumes (ie, on-market trades) are included above.

27. Figure 5 and Figure 6 show low levels of trading activity. There are also no obvious signs of liquidity improving over time. We note that the AEMC has previously stated that liquidity has been improving over time at Wallumbilla, but we think that either this trend has since disappeared, or AEMC may have been including off-market trades in its analysis.<sup>19</sup> While increasing volumes of off-market trade may be a positive sign for the East Coast Gas Market overall, we do not consider this to be a positive sign of Wallumbilla Hub development since these volumes cannot contribute to a reference price.
28. Figure 7 shows the trading at Wallumbilla broken down by participant type. There is less activity from industrial customers or retailers than at the downstream markets (compare Figure 4 above).

<sup>19</sup> See *2020 Biennial Review into Liquidity in Wholesale and Gas Pipeline Trading Markets*, AEMC, 17 July 2020, and the DISER consultation paper (*Options to advance the east coast gas market—Consultation on the Wallumbilla Gas Supply Hub and pipeline capacity trading framework*, November 2021), p. 21 and pp. 26-27.

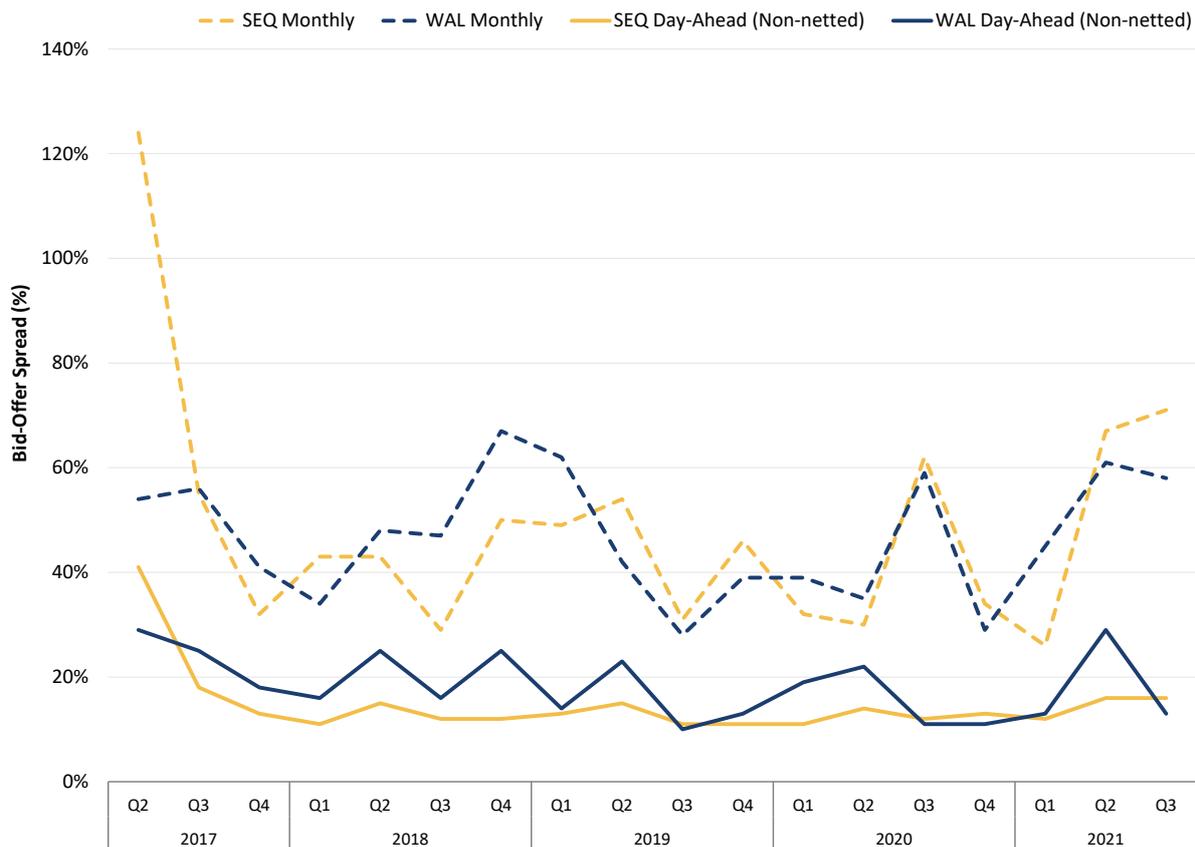
**FIGURE 7: BUY AND SELL VOLUMES AT THE GAS SUPPLY HUB BY PARTICIPANT TYPE**



Source: based on data from *AER Wholesale Quarterly Reports*, Q3 2021.

29. Consistent with the low level of trading activity shown above, bid-offer spreads are wide (see Figure 8). Bid-offer spreads are an important metric because it is an indication of the cost of trading: a seller looking to trade will receive the bid price, while a buyer looking to trade will pay the offer price. The bid-offer spread is also a measure of liquidity, or lack thereof. In more liquid markets, the bid-offer spread will be much narrower (perhaps low single digits of a percent of the prevailing price).

**FIGURE 8: BID-OFFER SPREADS AT WALLUMBILLA GSH**



Source: based on data from AER Wholesale Statistics, ‘GSH bid-offer spread metric (WAL)’ and ‘GSH bid-offer spread metric (SEQ)’.

30. In the discussion of trading in the downstream markets we showed a chart (Figure 3) illustrating the proportion of gas deliveries accounted for by short-term trading, which was recently between 10% and 25%. In the STTMs this figure could never be more than 100% by definition, since the product on the STTM is daily and the market mechanism is an auction that runs once per day. In contrast, at the Wallumbilla Hub gas for delivery on a particular day can in principle be traded many times per day, and can be traded on any day up to at least three months before delivery. Thus, in principle the volume of trading can exceed the volume of physical deliveries. Indeed, in some commodity markets (such as the Henry Hub or the TTF),<sup>20</sup> the volume of trading does exceed the volume of physical deliveries, by 20 to 50 times.<sup>21</sup> For the Wallumbilla Hub, this “churn” metric varies between about 0.2% and 7%, depending on whether the measure of total trading is on-market only or both on- and off-market, and depending on what measure one uses for the total physical size of the market. We show these churn metrics in Table 1. However, on any of these measures the churn at

<sup>20</sup> Natural gas hubs in respectively the US and the Netherlands.

<sup>21</sup> See, for example, *European Traded Gas Hubs: German hubs about to merge*, Patrick Heather, Oxford Institute for Energy Studies, OIES Paper NG 170 (July 2021).

Wallumbilla is much less than the level one would expect to see at a liquid hub in a mature gas market.

**TABLE 1: INDICATIVE WALLUMBILLA CHURN METRICS FOR 2020**

Units		Measure of Consumption	Churn Rates	
			Wallumbilla Total Traded Volumes	Wallumbilla Exchange-Traded Volumes Only
			TJ [B]	TJ [C]
AER Regional Queensland Gas Flows	[1]	285,954	7.21%	1.57%
East Coast Downstream Spot Market Demand	[2]	391,597	5.27%	1.15%
Total East Coast Gas Consumption	[3]	580,000	3.56%	0.78%
Total East Coast Gas Production	[4]	1,947,644	1.06%	0.23%

Sources and Notes:

[1], [2], [4]: Brattle analysis of data from AER Wholesale Statistics.

[3]: *AER State of the Energy Market Report, 2021*. Note this is an approximate value.

Churn rates calculated by dividing traded volumes against the measure of consumption:

[B] = 20,621 TJ ÷ [A]

[C] = 4,499 TJ ÷ [A]

- Consistent with the quantitative measures shown above, we understand from discussions with APPEA members that producers generally do not use the Wallumbilla Hub as a route to market for any significant quantities of gas (in aggregate producers are net sellers at Wallumbilla, but the volumes involved are small relative to sales via bilateral arrangements). The hub may be used as a source or sink for spare gas (for example, to cover an outage), and may be an alternative to moving gas in or out of storage. There may sometimes be arbitrage opportunities, for example against spot prices in downstream markets or between gas and electricity markets (for those gas market participants with gas-fired power generation), but producers essentially use the Wallumbilla Hub to balance or fine-tune their portfolios. This functional use, while important, is not likely to be sufficient in itself to create the liquidity necessary for a reliable reference price to be reported.

## D. Financial derivatives

- The ASX has developed financial derivatives based on both the day ahead price from the Wallumbilla Hub and the balancing price from the DWGM. These instruments in principle would allow market participants to hedge any exposure to these prices (as well as to take speculative positions). There is some trading activity in the DWGM product (around 1 PJ per quarter, a similar level to the amount of physical trading in the downstream spot markets), but no trading activity in the Wallumbilla financial product. Active trading in the physical product is a pre-requisite for significant trading in the derivative financial product.

33. An important difference between the Wallumbilla product available on the ASX and the WAL product available on the Gas Supply Hub is that the latter creates a physical delivery and receipt obligation. That is, if a market participant sells the WAL product on the Gas Supply Hub, its obligation is to deliver the gas (unless it conducts an offsetting trade to close out the position before delivery) in return for receiving the price at which the gas was sold. In contrast, on the ASX the obligation would be to pay whatever the spot WAL price turns out to be, in return for receiving the fixed price at which the derivative was sold. There is no option to deliver physically instead, although we understand that the ASX and AEMO are working to create a new product for listing on the ASX which could be settled either physically or financially.

### III. Improving the design of the Wallumbilla Hub

#### A. The Wallumbilla Hub and the Government's vision for the East Coast Gas Market

34. Trading at the Wallumbilla Hub is currently not liquid, and bid-offer spreads are high. AEMO publishes a price index using trades in the day-ahead WAL product, but this index is typically based on only a few transactions taking place each day. Currently, therefore, the Wallumbilla Hub is not meeting the Government's vision of liquid trading with a transparent reference price.
35. Since the Wallumbilla Hub is currently not supporting liquid trading, we have considered whether some alternative hub design might be more successful, or, in the alternative, whether the East Coast Gas Market itself is for some reason incompatible with the vision that the Government has set out and incapable of hosting a liquid wholesale market with a transparent reference price.
36. There are many overseas gas markets in which liquid trading and transparent reference prices have developed. The best-known examples are the Henry Hub in the US and the Netherlands TTF for continental Europe, but there are many other trading locations in both North America and Europe where successful liquid hubs have developed.<sup>22</sup>
37. The East Coast Gas Market is a relatively small market on a number of measures, including total volume consumed and number of participants currently actively engaged in the wholesale market. Total gas consumption in the East Coast Gas Market is about 2% of the volume consumed in the US market, but it is about one third the volume consumed in the Netherlands, half that consumed in Spain and twice the volume consumed in Austria.<sup>23</sup> There are fewer than 20 active participants at the Wallumbilla Hub, compared to dozens or even hundreds of participants in active overseas gas markets. Nonetheless, the Wallumbilla

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<sup>22</sup> For example, the NIT (Nova Inventory Transfer) market in Alberta, which on some measures is more liquid than the Henry Hub, as well as many other regional hubs in North America; and hubs in the UK (NBP), Germany (NCG and GPL), Italy (PSV), Australia (VTP) and Spain (PVB) are successful and improving over time (see, for example, OIES papers NG 170, NG 143, NG 104 and OIES Energy Insight 55 (*European Traded Gas Hubs: a decade of change*), all papers by Patrick Heather).

<sup>23</sup> European gas markets tend to be well interconnected with those of neighbouring countries: for example, total volume transported in the Netherlands is about double local consumption because of exports and transit flows, while for Australia it is about five times local consumption. Thus the hubs themselves are interconnected.

Hub has features which should encourage trading: as we discussed in section II, it is close to key pipeline, storage, production and export infrastructure, and the possibility that gas may need to move between different regions, in or out of storage, or between the local and export market should create trading opportunities. Although the East Coast Gas Market is smaller than overseas markets with liquid hubs, we do not think that it is so much smaller as to make liquid trading fundamentally impossible. It is difficult to see why market size, number of participants,<sup>24</sup> or the physical location of production and demand centres should preclude the possibility of liquid trading developing at Wallumbilla.

38. Furthermore, we think that the potential gains from improved liquidity are large. Particularly for smaller entities, the current lack of transparency may make it difficult to plan their operations and they may be uncertain whether the price at which they transact is a competitive one. If there were a reliable reference price, this would bring significant benefits in terms of transparency and reduced costs for market participants to buy and sell gas. In turn, this would support efficient investment signals (both for gas producers and gas consumers) and facilitate more competitive market outcomes.
39. Options for changing the design of the Wallumbilla Hub to encourage liquidity have been examined in previous reviews of the East Coast Gas Market, for example by the AEMC in its East Coast Gas Markets review published in 2016.<sup>25</sup> That review identified how the design of the Wallumbilla Hub could be altered, if needed to increase liquidity, by expanding the geographic scope of the hub. When the Gas Supply Hub was launched in 2014 the hub design originally included three separate trading locations at Wallumbilla which were replaced with one location in 2017.<sup>26</sup> The best chance for delivering liquid trading at Wallumbilla is further refining the design of the hub to expand the geographic scope and/or consolidate the traded products. We therefore recommend that options for doing this should be scoped out in detail so that the important implementation questions can be analysed and resolved, and the costs of reforms assessed against anticipated benefits.
40. We cannot be sure that improving the design of the hub would create a virtuous circle of increasing liquidity, but we think that the current design is unlikely to do so: on the measures we examined above, it is difficult to detect meaningful progress over the last several years. Market participants currently transact largely by means of long-term GSAs, and there is limited evidence of participation by end users at the Wallumbilla Hub. Thus even with an improved hub design, additional steps may be needed to kick-start the virtuous

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<sup>24</sup> There are currently few or no end users trading at Wallumbilla, so the number of potential participants is greater the current number of active participants.

<sup>25</sup> *East Coast Wholesale Gas Markets and Pipeline Frameworks Review*, AEMC (May 2016).

<sup>26</sup> See discussion in the AEMC's 2020 *Gas Markets Liquidity Review—Final report*, section 4.1. Note also discussion below about the 2017 changes.

circle of increasing liquidity, given that many market participants have no experience trading on the hub.

## B. Wallumbilla Hub design improvements

41. The fundamental problem with the Wallumbilla Hub is the lack of liquidity (whether measured by number of trades or participants, or volume of gas traded). The ongoing reforms such as initiatives to increase transparency of bilateral contracting will help the overall performance of the East Coast Gas Market, but we would not expect any of the current or recently-implemented reforms to have a significant impact on liquidity at the hub. There are several measures more directly related to the Wallumbilla Hub which can be implemented in the short term (discussed in section IV and in the DISER consultation paper), but these measures will not trigger a step change in liquidity.
42. Hub design reflects tradeoffs. An important tradeoff relates to the “scope” of the hub and the definition of the products delivered at the hub—a relatively narrow scope and tightly-defined product would correspond to gas delivered at a specific location in the pipeline network, with strict rules on timing and the rate of delivery. A broad scope and a looser product definition would correspond to gas delivered at more than one location in the network over a wider geographic area, and perhaps with more flexibility in terms of timing and the rate of delivery. A narrow scope and tightly-defined product has the benefit of enabling costs to be targeted on the market participants and transactions which cause them, and therefore promotes efficient pricing (for example, of transportation or balancing services). A broader scope and looser product definition promotes liquidity because it allows buyers and sellers with gas at different locations to trade without directly incurring the transactions costs of accessing the infrastructure needed to move between the locations specific to the transaction.<sup>27</sup> We think that the guiding principle for changing the design of the Wallumbilla Hub should be that, where there is a choice, an option which promotes liquidity should be preferred over one that does not.
43. As we noted above, the Wallumbilla Hub originally had three separate trading locations at Wallumbilla, which were consolidated into one product.<sup>28</sup> This change represented a

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<sup>27</sup> The necessary infrastructure still has to be paid for, but with a broader hub the costs would be shared more widely rather than being targeted to specific transactions. Analysing the best way to do this, and the treatment of existing contracts to use the infrastructure, will be an important part of the redesign process.

<sup>28</sup> Although within the one WAL product there are still two locations (high pressure and low pressure) which are not directly fungible.

broadening of the scope of the hub and a loosening of the product definition.<sup>29</sup> We think that a further broadening of scope and loosening of product definition is needed. Important questions will need to be analysed in detail—such as the need for investment to relieve constraints, the need for, role and funding of the hub operator, governance, and the treatment of existing long-term transportation contracts—in order to find a way forward that has acceptable costs and is not so complicated that it defeats the purpose of the reforms.

44. As we discuss in more detail below, we are not sure that a “virtual hub” as described in the DISER consultation paper is the only (or best) way of expanding the scope of the hub. However, we agree with the DISER consultation paper that an expansion of the hub would “represent the best chance of establishing a ‘critical mass’ of trading activity and triggering the virtuous cycle of trading liquidity required to underpin a reliable and transparent reference price for gas”, and that “[g]iven the very small number of participants at the GSH, no other option appears to offer the possibility of a step change in liquidity from current levels”.<sup>30</sup>
45. Figure 9 below is a map of the pipeline infrastructure around the Wallumbilla Hub,<sup>31</sup> and indicates the location of the WAL and SEQ products which are separately traded on the Gas Supply Hub.

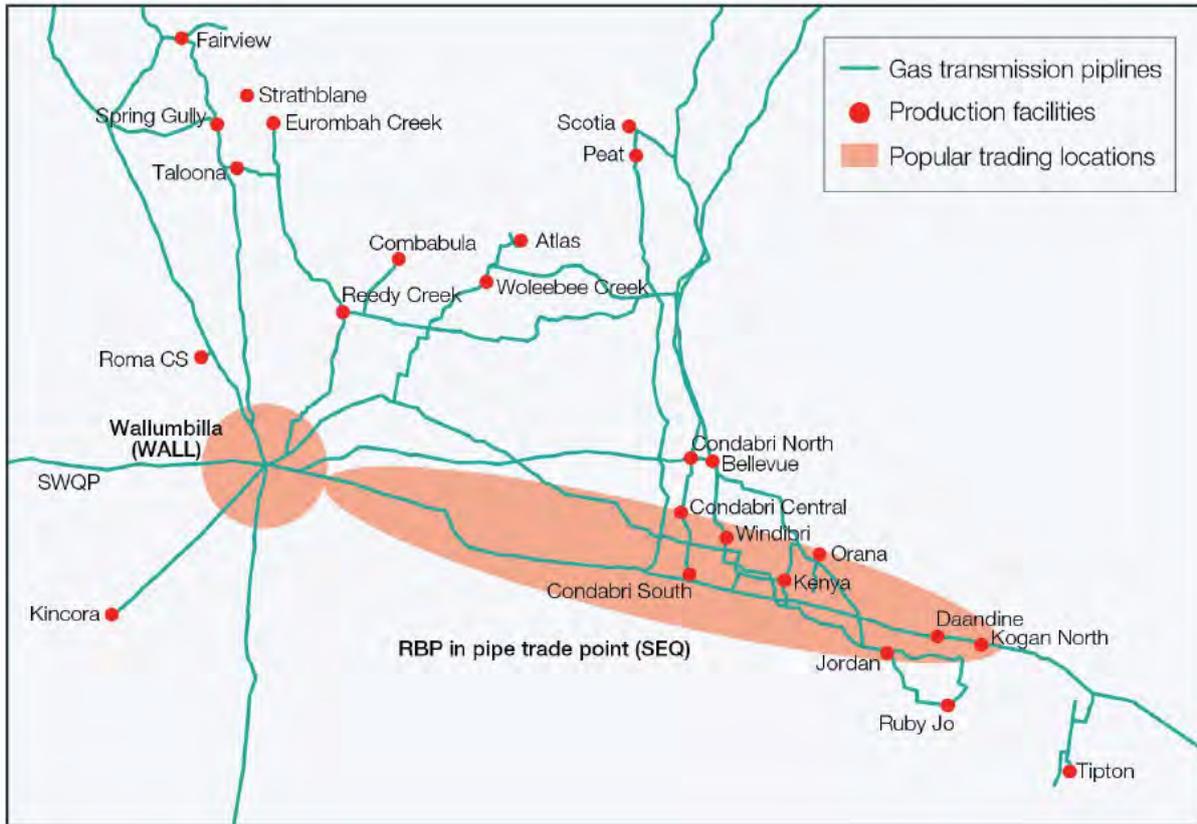
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<sup>29</sup> At the time, the AEMC said that the change “reduces the three pricing points at Wallumbilla to one, thereby pooling liquidity and potentially creating more trading opportunities” (*East Coast Wholesale Gas Markets and Pipeline Frameworks Review*, AEMC (May 2016), p. vi).

<sup>30</sup> DISER consultation paper, p. 37.

<sup>31</sup> The SWQP continues west to Ballera and eventually to Moomba; the RBP moves gas east to Brisbane, and the pipelines leaving the top of the map carry gas from production facilities and to the Gladstone LNG plants.

FIGURE 9: MAP OF THE PIPELINES AROUND THE WALLUMBILLA HUB



Source: AER Wholesale Markets Quarterly Report, Q3 2020.

46. As noted in the DISER consultation paper, the WAL and SEQ products are not “fungible”—ie, a buyer wanting to receive gas at the locations associated with the WAL product and a seller with gas at the SEQ location<sup>32</sup> cannot trade without separately arranging for transportation capacity. Furthermore, within the WAL product itself, there is a further division in that the product has several different delivery points associated with it, and some of these points are at higher pressure than the others. Moving gas from the low pressure points to a high pressure point requires a compression service. We understand that this gives rise to two related difficulties. First, a seller wanting to deliver gas to a low-pressure point may be matched with a buyer wanting to receive gas at a high-pressure point. If this happens, there will be an additional cost for the compression service. Second, there is no way for market participants to know in advance whether they will be matched in a way that requires compression or not, so there is no way to hedge this risk.
47. We therefore suggest that one possible step to expand the Wallumbilla Hub and improve liquidity would be to consolidate the WAL product locations so that all trades at these locations are treated in the same way, and gas at all of these locations is fully fungible.

<sup>32</sup> The SEQ product strictly speaking does not have a “location” in the sense that it relates to gas within the Roma to Brisbane pipeline. Thus only shippers with transportation rights on that pipeline can buy SEQ gas and (using their transportation rights) move the gas to a delivery point.

48. Another possible step to expand the scope of the hub could be to consolidate the WAL and SEQ products so that additional locations in the pipeline network around Wallumbilla would become eligible for trading. One option for such an expansion, described in the DISER consultation paper, could extend over the whole of the RBP, and thus could include the Brisbane STTM. We think that expanding the hub to consolidate WAL and SEQ would pool liquidity<sup>33</sup> and potentially encourage more trading, and that including the whole of the Roma to Brisbane pipeline and the Brisbane STTM would bring in further liquidity (and more potential trading counter-parties). However, we would also expect that implementation could be more complex if the STTM were merged with the Wallumbilla hub.<sup>34</sup> We do not know what the optimum geographic scope of the hub is, but we think that expanding the hub so that market participants have a wider choice of potential counterparties and can trade at the hub with reduced transactions costs would offer the best chance of increasing liquidity. We do not think this decision can be mapped onto a simple choice between “physical hub” or “virtual hub”—rather the decision is about how far the scope of the hub should be expanded.
49. We would emphasise that the key concept behind an expansion of the Wallumbilla Hub is to expand the pool of market participants able to trade with one another without incurring significant transactions costs to do so. Expanding the hub will require detailed implementation work, as foreshadowed in the DISER consultation paper (and also in earlier papers such as the AEMC’s *East Coast Wholesale Gas Markets and Pipeline Frameworks Review*). That work would include very significant questions such as the need for, role, and funding of a “hub operator”; the treatment of existing long-term transportation contracts; balancing arrangements; how hub infrastructure is paid for; governance; and how constraints are managed.

## C. Other suggestions in the DISER consultation paper

50. The DISER consultation paper suggests that a “market-making regime” could be implemented at the Wallumbilla Hub, as a way of providing liquidity and encouraging new market participants to trade at the hub. In mature gas markets, liquidity is provided on a commercial basis by market participants that are able to profit from doing so even at relatively narrow bid-offer spreads, and there is thus no need for an official “market-making”

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<sup>33</sup> We understand that there is about equal volumes of trading in the WAL and SEQ products currently, although we have not been able to make a quantitative analysis.

<sup>34</sup> The current designs of the Brisbane STTM and the Wallumbilla Gas Supply Hub are different in several significant respects. See, for example, *2020 Biennial Review into Liquidity in Wholesale and Gas Pipeline Trading Markets*, AEMC (17 July 2020), p. 144.

function. Designing a market-making function would involve some challenges, including the choice of product or products for which liquidity is to be provided. We are not aware of any good models from other jurisdictions for how to design a market-making function. We think that a better outcome would be for market participants to be able to identify and pursue commercial opportunities in providing liquidity, as they do in other markets, because this is more likely to result in liquidity being provided for products where there is market need. To date, however, that better outcome has not been achieved.

51. The changes to the design of the Wallumbilla Hub described above should create a more favourable environment for liquidity to develop. However, given the prevalence of long-term GSAs and the fact that many market participants have little or no experience with hub trading as a component of their approach to buying gas, it is possible that even after the design changes are implemented, some additional impetus may be needed to “kick start” the virtuous cycle of increased liquidity. A market-making function could be considered as a possible method for kick starting liquidity after the Wallumbilla Hub is redesigned, if, after the new design has had some time to take effect, market participants do not see a commercial opportunity in providing liquidity. It would not make sense to implement market making with the current design of the Wallumbilla Hub since redesigning the hub may be sufficient in itself to create the conditions for the desired increase in liquidity.
52. In section IV below we comment on two of the suggestions in the DISER consultation paper which could potentially be implemented relatively quickly and which in our view are low- or no-regrets (anonymous trading and prudential requirements).

## IV. Other short-term improvements

54. The DISER consultation paper suggests that improvements could be made to the way the Wallumbilla Hub currently operates in relation to prudential requirements and anonymity of trading. We agree and we think that these changes are likely to be low- or no-regrets. We think that they will improve the way the current design works and also will be compatible with a redesigned hub.
55. The process through which trades at the Wallumbilla Hub are “matched” means that buyers and sellers ultimately transact with each other rather than with AEMO / the exchange.<sup>35</sup> Thus while bids and offers posted to the Wallumbilla Hub are anonymous when posted, any that are accepted are likely to result in the identity of the market participant being revealed to the market participant that accepted the bid/offer. We think it possible that these arrangements discourage trading: for example, a buyer might be willing to pay a relatively high price at the hub in order to obtain gas at short notice, but might nonetheless fail to trade if it thought that knowledge of its high willingness to pay could become available to sellers and thus harm its ability to negotiate a good price in bilateral transactions.
56. We are not aware of any downsides or costs that would arise through modifying arrangements at the Wallumbilla Hub to enable anonymous trading. So far as we are aware, trading at hubs in other gas markets internationally is fully anonymous. We note that the DISER consultation paper suggests that making trading fully anonymous would require a balancing mechanism to be created to address the risk of a delivery failure. We think that any such mechanism should be simple, in order that anonymous trading can be implemented easily, while maintaining a strong incentive for participants to meet their delivery obligations.
57. The DISER consultation paper suggests that credit support and collateral requirements (ie, prudential requirements) at the Wallumbilla hub are onerous. In particular, the paper suggests that buyers of a monthly product have to post collateral equivalent to the entirety of their obligation immediately.<sup>36</sup> The usual approach to collateral requirements followed by commercial exchanges (such as NYMEX or the ASX) is to require collateral to cover a margin on the obligation sufficient to cover expected short-term movements in the market value of the product to within a high degree of likelihood. For example, based on an analysis of historical price movements, the exchange might determine that 99% of one-day movements in the price of a particular product are less than 25%. It would then require collateral equal to 25% of the price of the product. At the end of each day, the exchange would reduce the

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<sup>35</sup> See the DISER consultation paper, section 3.1.2.

<sup>36</sup> DISER consultation paper, pp. 31-2.

margin account by the actual price movement (ie, mark it to market), and require the holder to “top up” the margin with additional collateral. If the holder failed to do so, the exchange could liquidate the position and would not be exposed (unless the price movement exceeded 25%). We think that such an approach is standard. We do, however, recognise that the limited liquidity at the Wallumbilla Hub may mean that historical price movements might not be a good guide to future price movements, so some adjustment and approximation may be required. The underlying principle should be that the exchange should not be exposed to more than a small degree of credit risk, but that this risk also should not be zero because to hold full collateral so that the exchange is protected even if market prices went to zero would discourage trading and would not be a commercially-reasonable approach. We think it reasonable that credit requirements should be low enough to attract new participants to trade, but not so low as to expose the exchange to significant risk of default. The approach of commercial exchanges should be a guide.

58. We also think it reasonable that collateral requirements could be netted across the different markets that AEMO operates (ie, a buyer at Wallumbilla that is also a seller in the electricity market) should only have to post collateral against the net position. To do so would not increase AEMO’s exposure to credit risk so seems to have no downside, and would be commercially reasonable.
59. In discussion with APPEA members, we heard that market participants might be willing to trade at the Wallumbilla Hub further into the future than the current three monthly products allow,<sup>37</sup> and that listing additional months into the future would permit this to happen. We think that there are likely to be other factors that in any case discourage market participants from trading into the future at the Wallumbilla Hub (for example, we note that the ASX Wallumbilla derivative has no activity). Nonetheless, we do not think there would be any downside associated with listing products further into the future. We note that the DISER consultation paper suggests that this change should not be progressed because such products are unlikely to be traded. However, if there are no meaningful implementation costs associated with such a change, it would seem better to provide this option to market participants than not.<sup>38</sup>
60. We think that the suggestions above, and in particular changes to make trading at the Wallumbilla Hub anonymous, could encourage more trading. However, without the more substantial changes described in section III, we would not expect these changes to make a significant difference to the liquidity of trading at the hub.

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<sup>37</sup> Currently, a monthly product is listed for the next month, the month after that, and the month after that. Thus, in December 2021, the furthest forward product that can be transacted is the monthly product for March 2022.

<sup>38</sup> DISER consultation paper, p. 38.